Required Date: 19/06/2012

Reference:

Approvals:

Sequence ID/

Draw Nbr

\*100\*

Document Control

100

DC

**Work Center ID** 

D407-667-245

Accept

SPC (Y/N):

Set Up/

0.00

0.00

**Run Hours** 

CHU208

Page 1

\*N900040100\* **Cust Item ID: Customer:** Run Date: Tool ID Reject Accept Reject Insp. Code Qty Qty Number Stamp

110 Pick Kit 0.00 Packaging \*110\* Packaging Memo 0.00

DOCUMENT CONTROL

Memo

Req'd Qty: 1.00

Operation

Description

**Revision Nbr** 

Rev F/DEO

Process Plan: MLJ Date: 12 06 05 Tooling:

Date:

Photocopy bluefile and create labels as per PPP D407-667-205

120

Packaging

\*120\* CNC Bend 1

CNC Delta 100 Bender

**BENDING MACHINE - CROSSTUBES** 

0.00 Memo

1-Bend tube as per Dwg D407-667-245 using CNC bender program 407 Aft and

0.00

Dart Aerospace Ltd

W/O: WORK ORDER CHANGES

DATE STEP PROCEDURE CHANGE By Date Qty Chief Eng / Prod Mgr QC Inspector

Approval QC Inspector

Part No:		PAR #:	Fault	Category:	NCR: Yes	No	DQA:	Date: _	
•	Resolution:		Dispo	sition:	QA: N/C CI	osed	:	Date:	

NCR:	·			R NON-CONFORMANCE				
DATE	STEP	Description of NC Section A	Initia Chief Eng	Corrective Action Section B Action Description Chief Eng	Sign & Date	Verification Section C	Approval Chief Eng	Approval QC Inspector
•		·						÷
								·
<del></del>	-							:
<i>*</i>	•							

NOTE: Date & initial all entries

H:\fORMS\Quality Assurance\approved QAWCRWO RevE

Work Ord June-05-12 3:3		318	577	*853	318*	# <del>T- 3 1</del> .					Page
Item ID: Revision ID: Item Name:	D407-667-20 Crosstube Aft			Accept	*N900	040°	100	)*	Setup Star	**N	\$12 1008
Start Date: Required Date Reference:	05/06/2012 : 19/06/2012	Start Qty: 1.00 Req'd Qty: 1.00	*1* *1*		Cust Item II Customer:	D:					
Approvals:	Process Pla QC:	n:	Date:	Tooling: SPC (Y/N):	ti s	te:		†	Run Star Stop	*N *N	R4® R2*
Sequence ID/ Work Center II 130 *130* QC Quality Control	D	Operation Description QC15- Crosstube Dimens Memo	ional Check	Set Up/ Run Hours 0.00	Tool ID		Plan Code	Accept Qty	Reject Qty	Reject Number	

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<b>Dart Aer</b>	ospace	Ltd							**			
W/O:	. ]		- 1 - PAIR		WORK C	RDER CH	ANGES				_	
DATE.	STEP		PRO	CEDURE	CHANGE	0.10 (c)	<i>f</i>	Ву	Date	Qty	Approval Chief Eng / Prod Mgr	Approva QC Inspector
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Part No		esolution:	PAR #:									•
NCR:				7	·	ON-CONFO					6	j.
DATE	STEP	<b>Descripti</b> Secti	on of NC	Initia Chief Er	ı A	ctive Action Action Descri		Sign &	k Sect	cation tion C	Approval Chief Eng	Approval QC Inspecto
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	100	**								ţ		

NOTE: Date & initial all entries

H:\FORMS\Quality Assurance\approved QA\NCRWO RevE

Item ID: Revision ID: Item Name:	D407-667-20 Crosstube Aft	)5		Accept	*N900	040	100	* Set	up Start Stop	*N:	S1*
. 5.4	05/06/2012	Start Qty: 1.00 Req'd Qty: 1.00	*1* *1*	**************************************	Cust Item   Customer:	ID:		- 1 - 1	510p	*N:	<b>ミン*</b>
Approvals:		n:	Date:	Tooling: SPC (Y/N):		ate:	<del>-</del>	Ru	Start Stop	*NI *NI	₹1* R2*
Sequence ID/ Work Center II	)	Operation Description		Set Up/ Run Hours	Tool ID	Tool#		_	•	Reject Number	Insp. Stamp
*140* Crosstubes Crosstubes	• •	667-245. Dri	Il all (3) top holes.	0.00 g DT8583 & DT8584 as p	-			RM	_12-	7-	-18
<b>1</b> .		DT8584 as pe sides. 3-Flip tube ar	r Dwg D407-667-245Ch	nish size using drill Jig D eck dimensions between i m right to left, left to righ	holes on all four		>				
		4-Drill pilot h 245. Drill on	oles using drill Jig DT85 by the top (2) holes.	83 & DT8584 as per Dwg	g D407-667-				eli Contra del del		PA F
	ė:	5-Drill & rear as per Dwg D	n the top (2) holes to finis 407-667-245	sh size using drill Jig DT8	3583 & DT8584						
	-	Aft side has 3	x top holes.	Г8789 as per Dwg D407-							
,		only the top (	3) holes.	0T8789 as per Dwg D407	/					نام	
J.		compensate for	or paint.	45. Allow rivet to sit believes in the cuff D#						177	en.
		٠. ١		chamfer in the cuff D# and the	- 1						

				-	÷			•		DQA:	Date:	2
NCR: Y	'es / No				WORK ORDER NON-	CON	NFOR	MANCE / UPI	DATE			•
	,	ć			The second second					QA Closed:	Date:	
Mork Orda			ż		DISPOSITION				AGAINST D	EPARTMENT,	PROCESS	¥(
Work Orde	:i.			<del></del>	Rework	7		Skid-tube	Crosstube	7 Pro	d. Eng. Coor.	Engineering
Part N	lo.				Scrap	┪ ┃		Machining	Small Fab	<b>⊣</b>	e/Packaging	Quality
					Use-as-is	]	Thern	noforming	Finishing		Supplier	
NCR N	lo				Work Order Update	] [		Large Fab	Composite		Other	
Dt		<del>                                      </del>	Ţ	Doscri	ption of work order update		nitial	Act	ion	Sign &		
Root Cause	Date	Step	Qty	1	or Non-conformance	l l	ief Eng		ription	Date	Verification	QC Inspector
Doc/Data	Date	Jeep	1 4.7			1			-			
Equip/Tooling								9				
Operator				4								
Material										,		
Offset/Setup				44-1		1						
Other				٠.				-,-				
Process								***				
Supplier												
Training												
Unauthorized		4										÷
					F	AUL	T CATE	GORY				
Landi	ng Gear				Hardware	<b>,</b>		General	_	_	_	-
	Bending	Passes B	elow Mi	in	Breaking	Ш	Burrs			Maintenan	ce	Set-up
	Centre N	Not Conce	entric to	O/S	Missing	$\vdash$	Contam		-	Mislabeled		Supplier
	Cracks	Cracks Size/Length			Size/Length	$\vdash$	Cut Too			Off-Set		Temperature/Cure
	Crushed/Crimp at Bending			ig	Spinning	$\vdash$		entation/Data	_	Orientation	<u> </u>	Weld
	Inspection Strip in Tube				Threading	$\vdash$	Finish		<u> </u>	Out of Calib		Wrong Stock Pulled
	Other				Wrong	-		on Incomplete		Out of Sequ	<del></del>	٦.
	<b>⊢</b>	ed Wrong	_	_	Drill Holes	_		on Unqualified	<u> </u>	Outside Dim	_	Other
		on Inner I			Misaligned	-		ions Incomplete/l	Jnclear	Over/Under	tolerance	
	Torque Waves in Extrusion				Ovalized		Jigs/Fixt	tures/Tooling	1.0	Part Lost		

Kit Incorrect

Kit Missing

Part Moved Raw Material

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Turning Sequence

Wave/Twist in Tube

Over/Undersized

0.00

0.00

170

QC

\*170\*

Quality Control

QC5- Inspect part completeness to step on W/O

Memo

NCR: Yes	s / No	e.			WORK ORDER NON-C	ONFOR	MANCE / UP	DAIE	QA Closed:	Date:	
Nork Order:	,		4		DISPOSITION			AGAINST DE	PARTMENT	/PROCESS	
Part No		· · · · · · · · · · · · · · · · · · ·	-:		Rework Scrap	Than	Skid-tube Machining	Crosstube Small Fab	4	re/Packaging	Engineering Quality
NCR No	·		· · · · · · · · · · · · · · · · · · ·		Use-as-is Work Order Update	rner	moforming Large Fab	Finishing Composite		Supplier Other	Н
Root				Descri	ption of work order update	Initial	Ac	tion	Sign &		
Cause	Date	Step	Qty	(	or Non-conformance	Chief Eng	Desc	ription	Date	Verification	QC Inspector
oc/Data quip/Tooling											,
perator Naterial					2		·				
offset/Setup				•							
)ther	_										
rocess					·	1					a o
upplier	_						1				
raining Inauthorized											1
	<u> </u>		<u> </u>	L	F	AULT CAT	EGORY			<u> </u>	
Landing	Gear				Hardware		General	•			_
	Bending P	asses Be	low Mi	n [	Breaking	Burrs			Maintenan	ce	Set-up
	Centre No	t Conce	ntric to	o/s	Missing	Contar	mination		Mislabeled		Supplier
	Cracks				Size/Length	Cut To	o Short	4	Off-Set		Temperature/Cure
	Crushed/	Crimp at	Bendin	g	Spinning	Docum	entation/Data		Orientation	Misread	Weld
	Inspection	n Strip in	Tube		Threading	Finish			Out of Calib	ration	Wrong Stock Pulled
	Other				Wrong	Inspec	tion Incomplete		Out of Sequ	ence	-
	Positioned Wrong Drill Holes			Inspec	tion Unqualified		Outside Dim	nensions	Other		
	Ripples on Inner Bend Misaligned			Instruc	tions Incomplete/	'Unclear	Over/Under	tolerance			
	Torque Waves in Extrusion Ovalized			Jigs/Fix	ctures/Tooling		Part Lost				
	Turning Sequence Over/Undersized			Kit Inc	orrect		Part Moved				
	Wave/Twist in Tube Too Many			Too Many	Kit Mis	ssing		Raw Materia	al		

Date:

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\*85318\*

Page 5

June-05-12 3:37:11 PM Item ID: D407-667-205 Accept \*N900040100\* Setup Start **Revision ID:** Item Name: Crosstube Aft **Start Date:** 05/06/2012 Start Qty: 1.00 Cust Item ID: **Required Date:** 19/06/2012 Req'd Qty: 1.00 **Customer:** Reference: Run Approvals: Process Plan: Date: **Tooling:** Date: Stop QC: Date: SPC (Y/N): Date: Sequence ID/ Operation Set Up/ Tool ID Reject Tool # Plan Reject Accept Insp. **Work Center ID** Description **Run Hours** Qty Qty Code Number Stamp 180 Outsource process - ND per QS1038 4.1 0.00 \*120\* Outsource2 Memo Liquid Penetrant Inspection as per QSI 038O Issue P/O: LPI as per ASTM 1417 Outsource process - NDT Level 2 Attach copy of NDT results to work order 190 0.00 Packaging \*190\* Packaging 0.00 Memo Packaging Ensure copy of NDT results attached to work order. QC5- Inspect part completeness to step on W/O 0.00 0.00 Memo

A STATE OF

NCR: Yes / No WORK ORDER NON-CONFORMANCE / UPDATE														
		e.									QA Closed:	Dat	e:	
Work Ordei	r·		1		DISPOSITION				AGAINST DI	EF	PARTMENT	PROCESS		
Part No	o				Rework Scrap Use-as-is Work Order Update		Thern	Skid-tube  Machining  noforming  Large Fab	Crosstube Small Fab Finishing Composite			d. Eng. Coor. e/Packaging Supplier Other		Engineering Quality
Root				Descr	iption of work order update	T	nitial	Act	ion	1	Sign &			
Cause	Date	Step	Qty		or Non-conformance	Ch	ief Eng	Descr	ription		Date	Verification	1	QC Inspector
Ooc/Data  quip/Tooling Operator Material Offset/Setup Other Process Supplier Training Jnauthorized		¥.												
			<u>'</u>		F	AUI	LT CATE	GORY		•				
Landin	g Gear				Hardware		-	General						_
-	Bending Passes Below Min Centre Not Concentric to O/S Cracks Crushed/Crimp at Bending Inspection Strip in Tube Other Positioned Wrong Ripples on Inner Bend  Breaking Missing Size/Length Spinning Threading Wrong Drill Holes Misaligned					Finish Inspecti Inspecti		Inclear		Maintenand Mislabeled Off-Set Orientation I Out of Calibr Out of Seque Outside Dim Over/Under	Misread ation ence ensions		Set-up Supplier Temperature/Cure Weld Wrong Stock Pulled Other	
				Ovalized		4	tures/Tooling	-	_	Part Lost	CONCIGNICE	_		
Ī	Turning Sequence				Over/Undersized		Kit Inco	_	-		Part Moved			

Kit Missing

DQA:

Raw Material

Date:

Wave/Twist in Tube

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev F

June-05-12 3:37:11 PM

**Required Date:** 19/06/2012

D407-667-205

Accept

\*N900040100\*

Setup Start

Item Name: **Start Date:** 

**Revision ID:** 

Item ID:

Crosstube Aft 05/06/2012

Start Qty: 1.00 Req'd Qty: 1.00

**Cust Item ID:** 

**Customer:** 

Reference:

**Approvals: Process Plan:**  Date:

**Tooling:** 

Date:

Run

QC:

Date:

SPC (Y/N):

Date:

Sequence ID/ **Work Center ID** 

Operation Description

Set Up/ **Run Hours**  Tool ID

Tool # Plan Qty Code

Accept

**Qty** 

Reject Reject Number

12-7-24

Insp. Stamp

210

\*210\* SprayPaint

SprayPaint

Memo

0.00

0.00

Spray Painting

\*\*\*Mask underside of crosstube as shown\*\*\*

1-Prime inside and outside crosstube as per DEO D407-667-245 and QSI 005 4.2

2-Paint outside crosstube with White Imron as per QSI 005 4.2

PRIME: 121334

Start Time: 8:50 Fininsh Time: 9:50

M12.00.23 (1)

PAINT: 122381

220

QC14- Inspect Spray Paint

0.00

QC

Memo

0.00

Quality Control

Then, Wrap in plastic bag to protect from scratches

NCR: Ye	es / No	÷			WORK ORDER NON-	CON	IFORI	MANCE / UP	DATE	QA Closed:	Date:	
Work Order	r·				DISPOSITION				AGAINST DE	PARTMENT	/PROCESS	
Work Order					Rework	7		Skid-tube	Crosstube	Pro	d. Eng. Coor.	Engineering
Part No	0				Scrap	] [	ı	Machining	Small Fab	Rec/Sto	re/Packaging	Quality
				_	Use-as-is		Thern	noforming	Finishing		Supplier	
NCR No	0		<del></del>	<del>,</del>	Work Order Update	╛╽		Large Fab	Composite	]	Other	
Root				Descri	ption of work order update	Ir	itial	Ac	tion	Sign &		
Cause	Date	Step	Qty		or Non-conformance	Chi	ef Eng	Desc	ription	Date	Verification	QC Inspector
Doc/Data	_					1			•			
quip/Tooling	_	,					!					
Operator												
Material												
Offset/Setup												
Other	_											
Process												
Supplier	_											
Fraining												
Jnauthorized		<u> </u>				1					1	<u> </u>
						-AUL	CATE					
Landing	<del></del> -			г	Hardware			General		],,,:		<b>1</b> 6 - 4
	Bending I			_	Breaking	-	Burrs	in add a s		Maintenan	ce _	Set-up
-	Centre No	ot Conce	ntric to	<sup>0/3</sup>  -	Missing	-		ination		Mislabeled Off-Set		Supplier
-	Cracks	C!	n	_	Size/Length	-	Cut Too			-	14:	Temperature/Cure Weld
-	Crushed/	-		<b>F</b>	Spinning	-		entation/Data		Orientation	ļ	-1
-	Inspection Strip in Tube				Threading	<b>—</b>	Finish	an Incomplete		Out of Calib	L	Wrong Stock Pulled
}	Other Positioned Wrong			<u> </u>	Wrong Drill Holes	J	•	on Incomplete		Out of Sequi Outside Dim		Other
-	Ripples o	_			Misaligned	$\vdash$		on Unqualified ions Incomplete/	Uncloar	Over/Under		Tottlet
-	<del></del>			_ ⊢	Ovalized	_		ures/Tooling	Unclear	Part Lost		
-	Torque Waves in Extrusion Turning Sequence			"   <del>-</del>	Over/Undersized	-	iigs/Fixi Kit Inco	_		Part Moved	<del></del>	
	TIGHTE 3	LUUCIILE			10 YCI / OITUCI 314CU			1166	•	II GILIVIUVCU		

Kit Missing

Date:

DQA:

Raw Material

Wave/Twist in Tube

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev F

Page 7

Insp.

June-05-12 3:37:11 PM Item ID: D407-667-205 Accept \*N900040100\* Setup Start **Revision ID:** Item Name: Crosstube Aft **Start Date:** Start Qty: 1.00 05/06/2012 **Cust Item ID: Required Date: 19/06/2012** Req'd Qty: 1.00 **Customer:** Reference: Run Approvals: **Process Plan:** Date: \_\_\_\_ Tooling: Date: Stop QC: SPC (Y/N): Date: Date: Sequence ID/ Operation Tool ID Tool # Plan Reject Set Up/ Accept Reject **Work Center ID** Description Run Hours Code Qty Qty Number Stamp 230 0.00 Crosstubes \*230\* 12-7-28 Crosstubes 0.00 Crosstubes 1- Install chafing shield as per DEO D407-667-245. Top holes should be facing A/R Proseal 890 Batch: 122441 2- Lightly scuff the bonded area using a 320 grit sand paper and clean the area with 41058 wash 'n' wipe 3-Install support with Scotch-Weld DP460 and install clamps as per DEO Dwg D407-667-245 using installation jig DT9025. Torque clampsas per dwg Scotch-Weld DP460 Batch: 121368 EXP: 13.4.13 4-Install nut plates as per Dwg D407-667-245. Touch-up rivet heads with Imron paint.

240

QC5- Inspect part completeness to step on W/O

Memo

0.00

\*240\* QC

Quality Control

12.07.31

0.00

NCR: Y	·												
		s*							QA Closed:	Date:			
Work Orde	r:		. :		DISPOSITION			AGAINST DE	PARTMENT	/PROCESS			
Part N	o				Rework Scrap		Skid-tube Machining	Crosstube Small Fab	4	d. Eng. Coor. re/Packaging	Engineering Quality		
NCR N	o				Use-as-is Work Order Update	The	rmoforming Large Fab	Finishing Composite	]	Supplier Other			
Root				Descri	ption of work order update	Initial	A	ction	Sign &		·		
Cause	Date	Step	Qty		or Non-conformance	Chief Er	ng Des	cription	Date	Verification	QC Inspector		
Doc/Data													
quip/Tooling													
Operator													
Viaterial [						1							
Offset/Setup	_												
Other													
Process													
Supplier		1											
Fraining													
Jnauthorized										<u> </u>			
						AULT CA		<del> </del>					
Landin	g Gear				Hardware		General		_	_	•		
Ļ	Bending	Passes Be	low Mi	ր  _	Breaking	Burrs		<u> </u>	Maintenan	ce	Set-up		
	Centre N	ot Conce	ntric to	o/s	Missing	<del>  </del>	mination		Mislabeled		Supplier		
	Cracks				Size/Length	Cut T	oo Short		Off-Set		Temperature/Cure		
	Crushed/	Crimp at	Bendin	g [_	Spinning	Docu	mentation/Data		Orientation	Misread	Weld		
L	Inspectio	n Strip in	Tube		Threading	Finish	1		Out of Calib	ration	Wrong Stock Pulled		
	Other				Wrong	Inspe	ction Incomplete		Out of Sequ	ence	_		
	Positione	ed Wrong			Drill Holes	Inspe	ction Unqualified		Outside Dim	nensions	Other		
	Ripples o	n Inner B	end		Misaligned	Instru	ictions Incomplete	/Unclear	Over/Under	tolerance	,		
	Torque V	Vaves in I	Extrusio	n 🗌	Ovalized	Jigs/F	ixtures/Tooling		Part Lost				
	Turning Sequence				Over/Undersized	Kit In	correct		Part Moved				

Kit Missing

Date:

Raw Material

Wave/Twist in Tube

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June-05-12 3:37:11 PM

**Required Date: 19/06/2012** 

Item ID:

D407-667-205

\*N900040100\*

Setup Start

**Revision ID:** 

Item Name: **Start Date:** 

Crosstube Aft

Start Qty: 1.00 05/06/2012

Req'd Qty: 1.00

**Cust Item ID:** 

**Customer:** 

Reference:

Approvals:

Process Plan:

QC:

Date:

Tooling:

Accept

SPC (Y/N):

Set Up/

**Run Hours** 

Date: Date: Run

Start

Sequence ID/ Work Center ID 250

\*250\*

Packaging Packaging

Memo

Operation

Description

Pick Kit

0.00

Date:

0.00

Tool ID

Tool # Plan Code

Accept Qty

Reject Qty

Reject

Insp. Number Stamp

260

QC4-100% Inspect kits for completeness

0.00

0.00

0.00

0.00

\*260\*

QC

Quality Control

270

\*270\* Packaging

Packaging

Packaging

Memo

Memo

Identify and in kanban rack

Location:

(c/s/s/o, (c)

NCR: Y	NCR: Yes / No WORK ORDER NON-CONFORMANCE / UPDATE												
		r								QA Closed:	Da	te:	
Work Orde	r:		-		DISPOSITION	_		AGAINS	ΓDE	PARTMENT	PROCESS		
Part N NCR N					Rework Scrap Use-as-is Work Order Update	Th	l ern	Skid-tube Crosstube Machining Small Fal noforming Finishin Large Fab Composite		-	d. Eng. Coor. re/Packaging Supplier Other		Engineering Quality
Root				Descri	ption of work order update	Initia	ıl	Action		Sign &			
Cause	Date	Step	Qty	(	or Non-conformance	Chief E	ng	Description		Date	Verificatio	n	QC Inspector
Doc/Data					•								
Equip/Tooling													
Operator													
Material													
Offset/Setup													
Other													
Process		<u> </u>	1 1										
Supplier	_	ļ											
Training													
Unauthorized		L	<u> </u>										<u></u>
		-				AULT CA	AIE						
Langin	g Gear	\ D-	.1 8.45	_	Hardware			General		<b>7.</b> 4 - 2 - 4		_	٦
}	Bending P Centre No			<u> </u>	Breaking Missing	Burr		ination	-	Maintenan Mislabeled	ce	$\vdash$	Set-up
	Cracks	or conce	nuic to C	"³  -	Size/Length	$\vdash$		Short	$\vdash$	Off-Set		H	Supplier
F	Crushed/0	Crimp at	Rending		Spinning	_		entation/Data	$\vdash$	Orientation	Microad	$\vdash$	Temperature/Cure Weld
}		-	_	-	Threading	Finis		entation/ Data	$\vdash$	Out of Calibr		<del> </del>	Wrong Stock Pulled
ŀ	Inspection Strip in Tube Other			<u> </u>	Wrong	$\vdash$		on Incomplete	-	Out of Seque			I wrong Stock Pulled
Ì	Positioned Wrong				Drill Holes	)———		on Unqualified	$\vdash$	Outside Dim		<u> </u>	Other
ŀ		_		Γ-	Misaligned			ions Incomplete/Unclear	$\vdash$	Over/Under		<u> </u>	Totalei
1	Ripples on Inner Bend Torque Waves in Extrusion				Ovalized			ures/Tooling	$\vdash$	Part Lost	torer direct	—	
<u> </u>	Turning Sequence				Over/Undersized	$\mathbf{H}^{-}$		rrect	$\vdash$	Part Moved	,	_	

Kit Missing

DQA:

Raw Material

Date:

Wave/Twist in Tube

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June-05-12 3:37:11 PM

**Required Date:** 19/06/2012

Item ID:

D407-667-205

Accept

\*N900040100\*

Setup Start

**Revision ID:** Item Name:

Crosstube Aft

**Start Date:** 

05/06/2012

Start Qty: 1.00 Req'd Qty: 1.00

**Cust Item ID:** 

**Customer:** 

Reference:

Approvals:

Process Plan:

QC: \_\_\_\_

Date: Date:

**Tooling:** 

SPC (Y/N):

Date: Date:

Run

Start

Stop

Sequence ID/ Work Center ID

Operation Description

Set Up/ Run Hours

0.00

\*280\*

280

QC

Memo

QC21- Final Inspection - Work Order Release

0.00

Tool ID

Tool # Plan Code

Accept Qty

Reject Qty

Reject Insp. Number

MLJ 17/08/01

Quality Control

NCR: Y	es / No	4			WORK ORDER NON-	CONFO	KIVIAINCE / OF	DATE	QA Closed:	Date:	
Work Orde	·r·		•		DISPOSITION			AGAINST DE	PARTMENT	/PROCESS	
Part N					Rework Scrap		Skid-tube Machining	Crosstube Small Fab	-{	od. Eng. Coor.	Engineering Quality
NCR N	lo				Use-as-is Work Order Update	The	ermoforming Large Fab	Finishing		Supplier Other	
Root				Descri	ption of work order update	Initia	Ad	ction	Sign &		
Cause	Date	Step	Qty	(	or Non-conformance	Chief E	ng Desc	cription	Date	Verification	QC Inspector
Doc/Data equip/Tooling					•						
Operator											
<b>Material</b>		ĺ									
Offset/Setup											
Other	_										
rocess											
Supplier	_										
Fraining		•									
Inauthorized						AULT CA	TEGORY		<u> </u>	1	
Landin	ng Gear	<del></del>		· · · · · · · · · · · · · · · · · · ·	Hardware '	AULI CA	General	· · ·	<del></del>	<del></del>	
	<u> </u>	Passes Be	elow Mir	, <u> </u>	Breaking	Burrs			] Maintenan	ice	Set-up
ŀ		Not Conce		—	Missing		amination		Mislabeled	· · ·	Supplier
	Cracks				Size/Length	Cut 7	oo Short		Off-Set		Temperature/Cure
ľ	Crushed	/Crimp at	Bending	,	Spinning	Docu	mentation/Data		Orientation	Misread	Weld
	Inspecti	on Strip in	Tube		Threading	Finis	า		Out of Calib	ration	Wrong Stock Pulled
	Other	<b>─</b> '		Wrong	Inspe	ection Incomplete		Out of Sequ	ence		
	Positioned Wrong Drill Holes		Drill Holes	Inspe	ection Unqualified		Outside Dim	nensions	Other		
	Ripples on Inner Bend Misaligned		Misaligned	Instr	uctions Incomplete	/Unclear	Over/Under	tolerance			
	Torque	Waves in I	Extrusio	n [	Ovalized	Jigs/I	ixtures/Tooling		Part Lost		
[	Turning Sequence Over/Undersized			Kit In	correct		Part Moved				
	Wave/Twist in Tube				Too Many	Kit N	issing		Raw Materia	al	

Date:

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev F

## **Picklist Print**

June-05-12 3:37:15 PM

Work Order ID: 85318

\*85318\*

Parent Item:

D407-667-205

\*D407-667-205\*

Parent Item Name: Crosstube Aft

**Start Date:** 05/06/2012

. Required Date: 19/06/2012

Page 1

Start Qty: 1.00

Required Qty: 1.00

**Comments:** 

IPP Rev:C 05.09.02 Add holes for compatibility with Bell SkidtubesKJ/JLM

IPP Rev:D Added Magnobond, Rubber Cushion & Clamps

JLM

\*\*\*\*CHANGE TO CHG 005 - IF USING D2894-1 B35578 OR GREATER\*\*\*\* IPP Rev:E 08-05-22 add comment in seq. 6 and QC15 and QC5 DD verified

by:EC

IPP Rev:F 08-06-12 add comment in seq. 24 DD verified by:EC

IPP Rev:G 08-08-19 revE as per dwg DD verified by:EC

IPP Rev H 09.01.06 ECN 08-562 EC verified by:DD IPP Rev:I 10.04.07 revise route seq. in bom DD verified by:JLM IPP Rev J 11.04.26

removed abrasion strip ecn 11-551 EC verified

by:DD

IPP REV:K

11.10.03 DEO D407-667-245-F-2 DD verf:EC

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D407-667-205TRN  *D407-667  Crosstube Turning Detail	7-205TR	Manufactured	No	<del></del>		110	Each 73 805	0.0000		1 5	<i>AD</i>	1d. e	·/
*AyNA60.ID		Purchased	No			230	Each	0.0000	**	18 	11954	6	W_
D2873-043 *D2873-04 Nut Plate Assembly	13*	Manufactured	No			230	Each	40.0000	2 <b>**</b>	2	AP	12-7-	<i>35</i>
		·		_	72644 82949	Loc	Oty 40 2 38	Loc Code		( <u>a</u> )	_		

NCR: Ye	es / No				<b>WORK ORDER NON-</b>	-COI	IFORI	MANCE / UPI	DATE				
		r								QA Close	ed: Da	te:	·
Work Orde	r:				DISPOSITION				AGAINST D	EPARTME	NT/PROCESS		
					Rework Scrap		Skid-tube Crosstube  Machining Small Fab				Prod. Eng. Coor. Store/Packaging	Engineeri Quali	
Part N	o				Use-as-is	-		— — — — — — — — — — — — — — — — — — —	Finishing	- Mec/s	Supplier	<b>—</b>	"'H
NCR No.					Work Order Update						Other	<del></del>	Ц
Root				Descri	ption of work order update	- II	nitial	Act	ion	Sign &			
Cause	Date	Step	Qty		or Non-conformance	Chi	ef Eng	Descr	ription	Date	Verificatio	n QC Insp	ector
Doc/Data													
quip/Tooling													
Operator		1											
Material				•							1		
Offset/Setup													
Other											-		
Process												]	
Supplier	_					İ							
Training										,			
Jnauthorized		<u> </u>						000%					
						FAUL	T CATE		· · · · · · · · · · · · · · · · · · ·			<del></del>	
Landin	<del></del>			Γ	Hardware		Burrs	General	Г	Mainter	anco	Set-up	
.	Bending			<b>⊢</b>	Breaking Missing			ination	<u> </u>	Mislabel		Supplier	
į	Centre N	ot Conce	ntric to	<sup>5/3</sup>  -	Size/Length		Cut Too			Off-Set	zu	Temperature	e/Cure
ŀ	Cracks				Spinning	-		entation/Data	<del> -</del>	-	on Misread	Weld	e, cure
}	Crushed/Crimp at Bending Inspection Strip in Tube			' <u> </u>	Threading	-	Finish	entation/ Data	<b>—</b>	_	alibration	Wrong Stock	k Pulled
}	Other	ni Suip III	iube	<u> </u>	Wrong	$\vdash$		ion Incomplete	<u> </u>	Out of Se			· · uncu
}	Positione	ed Wrong	•	<u> </u>	Drill Holes	-	-	ion Unqualified	F		Dimensions	Other	
ŀ	Ripples	_			Misaligned		•	ions incomplete/l	Unclear -	-	der tolerance		<del></del>
ŀ	<del></del>			, <u> </u>	Ovalized	_		tures/Tooling		Part Lost			
ŀ	Torque Waves in Extrusion				Over/Undersized	Kit Incorrect Part Moved							

Kit Missing

DQA: \_\_\_\_\_ Date: \_\_\_

Raw Material

Wave/Twist in Tube

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev F

## **Picklist Print**

June-05-12 3:37:15 PM

Work Order ID: 85318

Parent Item:

D407-667-205

\*85318\* \*D407-667-205\*

82947

Parent Item Name: Crosstube Aft

D2873-045

\*D2873-045\*

Nut Plate Assembly

D2894-1

\*D2894-1\* 2.750 Support

D3190-1

\*D3190-1\*

Chafing Shield

Manufactured

Manufactured

Manufactured

No

Location

Location

LG052

230

Each

33 0000

2 \*\*

Start Qty: 1.00

Start Date: 05/06/2012

Al 12-7-25

Required Oty: 1.00

**Required Date:** 19/06/2012

Loc Code Loc Qty

33 33 230 Each

7.0000

\*\*

Loc Qty LG052 75212 82007 6

230 Each

41.0000

Loc Code

\*\*

# 12-7-28

Location Loc Qty Loc Code LG053 23 75947 23 LG055 18 18

NCR: Y	CR: Yes / No WORK ORDER NON-CONFORMANCE / UPDATE														
			*								_	QA Closed:	Da	te:	
Work Orde	r.			4		DISPOSITION				AGAINST DI	Εf	PARTMENT	PROCESS		
Part No.  NCR No.						Scrap Machining Sma Use-as-is Thermoforming Fin			Crosstube Small Fab Finishing Composite	Rec/Store/Packaging Quality Supplier				4	
Root Cause		Date	Step	Qty	1	ption of work order update or Non-conformance		nitial ief Eng		tion ription		Sign & Date	Verificatio	n	QC Inspector
Doc/Data	ᅱ	Date	эсер	Qty		or reon comormance	-	ici ciig	DC30.	- Inperorr	+	- 5000	Vermodelo		Qu'inspector
Equip/Tooling											١				
Operator															
Material	$\dashv$		-			•									
Offset/Setup	$\neg$														
Other												. !			
Process		:													
Supplier												•			
Training											-				
Unauthorized															
						F	AUL	T CATE	GORY	_					
Landi	ng G	ear			····	Hardware			General		_	-			-
	_	Bending P				Breaking	$\vdash$	Burrs			-	Maintenan	ce		Set-up
		Centre No	t Conce	ntric to	o/s	Missing	Ш	Contam	ination		╝	Mislabeled			Supplier
	_	Cracks				Size/Length	$\vdash$	Cut Too			╛	Off-Set		<u>_</u>	Temperature/Cure
	$\vdash$	Crushed/0	-		g	Spinning	-		entation/Data		_	Orientation I		_	Weld
		Inspection	n Strip in	Tube		Threading	_	Finish		<u> </u>		Out of Calibr			Wrong Stock Pulled
	_	Other				Wrong	-		on Incomplete	<u></u>	-1	Out of Seque		_	1
	_	Positioned	_		_	Drill Holes	-	-	on Unqualified		_	Outside Dim			Other
:		Ripples or				Misaligned	-		ions Incomplete/	Unclear	_	Over/Under	tolerance	_	
	Torque Waves in Extrusion					Ovalized	1	Jigs/Fixt	tures/Tooling		-	Part Lost			

Kit Incorrect

Kit Missing

DQA:

Part Moved

Raw Material

Date:

Turning Sequence

Wave/Twist in Tube

Over/Undersized

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev F

June-05-12 3:37:15 PM

Work Order ID: 85318

Parent Item:

D3595-063-450

D407-667-205

Parent Item Name: Crosstube Aft

\*85318\* \*D407-667-205\*

Start Date: 05/06/2012

Required Date: 19/06/2012

Required Qty: 1.00

Start Qty: 1.00

179.8095

\*\*

\*D3595-063-450\*

**RUBBER CUSHION** 

Location	Lo	e Qty	Loc Code			
LG		60				
82511		60				
LG051		109.7				
80161		1.7				
84715		108				
MAT052	10.1	09474				
67353		2				
68893		6				
70113		0 56				
71354		0.2				
74113	0.3	49474				
75597		1				
	230	Each	144 0000	14	1.4	<del>-</del>

Each

MS20601-AD4W8

Purchased

Manufactured

No

\*\*

Al 12-7-25

\*MS20601-AD4W8\* RIVET

<b>Location</b>	Loc Qty	Loc Code
LG051	33	
121017	33	
ST314	100	
121827	100	
ST322	11	
121255	11	

230

-	14)

							•		DQA:	Date:	
NCR: Y	es / No				WORK ORDER NON-O	CONFOR	MANCE / UPI	DATE			
		٠							QA Closed:	Date:	
Work Orde	r.		•		DISPOSITION			AGAINST DE	PARTMENT	PROCESS	
Part No.  NCR No.					Rework Skid-tube Scrap Machining Use-as-is Thermoforming Work Order Update Large Fab			Crosstube Small Fab Finishing Composite	1	d. Eng. Coor. re/Packaging Supplier Other	Engineering Quality
Root				Descri	ption of work order update	Initial	Act	ion	Sign &		,
Cause	Date	Step	Qty	(	or Non-conformance	Chief Eng	Descr	ription	Date	Verification	QC Inspector
Doc/Data					•						
Equip/Tooling											
Operator											
Material [											
Offset/Setup											
Other											
Process											
Supplier		1				İ					
Training											
Unauthorized			<u> </u>							L <u>.</u>	
					F	AULT CATE					
Landir	ng Gear				Hardware		General	·	•		· •
	Bending	Passes Be	elow Mi	n	Breaking	Burrs			Maintenan	<b></b>	Set-up
	Centre Not Concentric to O/S Missing					Contan	nination		Mislabeled		Supplier
	Cracks			· _	Size/Length	Cut Too	Short		Off-Set	<u> </u>	Temperature/Cure
	Crushed/Crimp at Bending Spinning				Spinning	Docum	entation/Data		Orientation	<b>├</b>	Weld
	Inspection	on Strip in	Tube		Threading	Finish			Out of Calib	ration	Wrong Stock Pulled
	Other Wrong					Inspect	ion Incomplete		Out of Sequ	ence	

Inspection Unqualified

Jigs/Fixtures/Tooling

Kit Incorrect

Kit Missing

Instructions Incomplete/Unclear

**Drill Holes** 

Misaligned

Over/Undersized

Ovalized

Too Many

Other

Outside Dimensions

Part Lost

Part Moved

Raw Material

Over/Under tolerance

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev F

Positioned Wrong

Turning Sequence

Wave/Twist in Tube

Ripples on Inner Bend

Torque Waves in Extrusion

June-05-12 3:37:15 PM

Work Order ID: 85318

Parent Item:

D407-667-205

Parent Item Name: Crosstube Aft

\*85318\* \*D407-667-205\*

**Start Date:** 05/06/2012

4

**Required Date:** 19/06/2012

Start Qty: 1.00

Required Qty: 1.00

MS21920-22

MS21920-25

Purchased

No

230

Each

48.0000

Loc Code

\*\*

A 12-7-28

\*MS21920-22\* Clamp(per MIL-DTL-8783C)

Purchased No

Loc Qty Location LG 119545 LG050 47 116207 117506 118186 8 (2063T) 31 230 Each

123.0000

\*\*

\*MS21920-25\*

Clamp(per MIL-DTL-8783C)

<u>Location</u>	Loc Qty	Loc Code
LG050	75	
116264	2	
117998	4	
118142	4	
119339	2	
119746	2	
120475	7	
120920	54	
LG051	48	
121583	48	

NCR: Y	es / No				WORK ORDER NON-O	CON	<b>FORN</b>	MANCE / UP	DATE					
		e*								_	QA Closed:	Dat	æ:	
Work Orde	r:				DISPOSITION				AGAINST I	Œ	PARTMENT	PROCESS		
WOIR OIGE	· ·	·			Rework			Skid-tube	Crosstube		Prod. Eng. Coor.			Engineering
Part N	0.				Scrap	]	P	Machining	Small Fab		Rec/Store/Packaging			Quality
					Use-as-is			noforming	Finishing		Supplier			
NCR N	o. <u>·</u>				Work Order Update Large Fab Composite						]	Other		
Root				Descri	ption of work order update	In	itial	Ac	tion		Sign &		$\neg$	
Cause	Date	Step	Qty	(	or Non-conformance	Chie	ef Eng	Desc	ription		Date	Verification	า	QC Inspector
Doc/Data												, and the second		
quip/Tooling									•		:			
Operator											_			
Material														
Offset/Setup			] ]											
Other		ļ ,												
Process		l	1										1	
Supplier		1												
Training														
Unauthorized						<u> </u>						<u> </u>		
						AULT	CATE				<u> </u>		<del></del>	
Landin	g Gear	_			Hardware	П.		General	г		1, 4		_	la .
ļ	Bending			<u> </u>	Breaking	1	Burrs				Maintenan	ce	<del> </del>	Set-up
	Centre N	ot Conce	ntric to (	<sup>5/S</sup>	Missing	<b>—</b>		ination			Mislabeled		$\vdash$	Supplier
}	Cracks		n !:		Size/Length	_	Cut Too				Off-Set	8 4:	<del> </del>	Temperature/Cure
}	Crushed/	•	_	·	Spinning	$\vdash$		entation/Data			Orientation		<del> </del>	Weld
-	Inspectio	n Strip in	Tube	-	Threading	$\vdash$	inish	!!	ŀ		Out of Calib		<u> </u>	Wrong Stock Pulled
}	Other	-1 <b>14</b> /		<u> </u>	Wrong		•	on Incomplete	·		Out of Seque Outside Dim		_	Other
ļ	Positione	_			Drill Holes  Misaligned		-	on Unqualified	Uncloar		Over/Under			Journel
-	Ripples o			、	Ovalized			ions Incomplete/ ures/Tooling	Unclear		Part Lost	colerance	—	
	Turning S			' <u> </u> -	Ovalized Over/Undersized	<b>—</b>	igs/Fixt (it Inco	_			Part Lost		—	
	Wave/Tw	•		<del> </del>	4 '	$\vdash$	(it inco				Raw Materia	N.		
	wave/1v	vist in TUI	JE .		Too Many		VIC IVIISS	III I			naw wateria	11		

Date: \_\_\_

DQA:

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev F

June-05-12 3:37:15 PM

Work Order ID: 85318

Oluer ID: 63316

Parent Item:

AN5-10A

AN5-32A

D407-667-205

Parent Item Name: Crosstube Aft

\*85318\*
\*D407-667-205\*

Start Date: 05/06/2012

**Required Date:** 19/06/2012

Required Qty: 1.00

Start Qty: 1.00 215.0000

\*\*

122 15/

tion Loc Qty

250

Each

Purchased No

No

No

Purchased

Purchased

 Location
 Loc Qty

 ST337
 215

 118191
 80

 121181
 35

 121243
 100

 250
 Each

245,0000

Loc Code

4 -

Location Loc Qty Loc Code ST339 145 119862 50 120423 75 120910 20 ST340 100 121541 100 250 Each 64.0000

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(12/8/s) ()

 Location
 Loc Qty
 Loc Code

 339
 25

 121181
 25

 ST339
 39

 120422
 39

M/20422

									DQA:	Date:			
NCR: Y	es / No				WORK ORDER NON-	CONFO	RMANCE / U	PDATE					
		£							QA Closed:	Date:			
Work Orde	ar.				DISPOSITION			AGAINST DE	PARTMENT/PROCESS				
WOIK OIGE					Rework	7	Skid-tube	Crosstube	] Pro	Prod. Eng. Coor. Engineering			
Part N	lo.				Scrap	Scrap Machining Small Fab Rec/Store					Quality		
					Use-as-is	The	rmoforming	Finishing		Supplier			
NCR N	lo	<del></del>			Work Order Update	J	Large Fab	Composite	j	Other			
Root				Descri	ption of work order update	Initial	•   •	Action	Sign &		T		
Cause	Date	Step	Qty	(	or Non-conformance	Chief Er	g De:	scription	Date	Verification	QC Inspector		
Doc/Data			1										
Equip/Tooling		İ					f I						
Operator			1 1										
Material													
Offset/Setup													
Other													
Process													
Supplier													
Training											·		
Unauthorized		<u> </u>	<u> </u>										
					F	AULT CA							
Landir	ng Gear				Hardware		General	_	<b>-</b>	_	7		
	Bending I			—	Breaking	Burrs		_	Maintenan	ice	Set-up		
	Centre N	ot Conce	ntric to (	D/S	Missing	$\vdash$	amination		Mislabeled	<u> </u>	Supplier		
	Cracks	Cracks Size/Length					oo Short	<u> </u>	Off-Set	<u></u>	Temperature/Cure		
	Crushed/Crimp at Bending Spinning				4	$\blacksquare$	mentation/Data	<u></u>	Orientation		Weld		
	Inspection Strip in Tube Threading				Finish			Out of Calib	<b>L</b>	Wrong Stock Pulled			
	Other				Inspe	ction Incomplete		Out of Sequ		•••			
	Positioned Wrong Drill Holes					Inspe	Inspection Unqualified			nensions	Other		
	Ripples on Inner Bend Misaligned Instructions Incomplete					e/Unclear	Over/Under	tolerance	,				

Jigs/Fixtures/Tooling

Kit Incorrect

Kit Missing

Part Lost

Part Moved

Raw Material

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev F

Turning Sequence

Wave/Twist in Tube

Torque Waves in Extrusion

Ovalized

Too Many

Over/Undersized

June-05-12 3:37:15 PM

Work Order ID: 85318

Parent Item:

MS21049L5

D407-667-205

MS21042L5\*

Parent Item Name: Crosstube Aft

\*85318\* \*D407-667-205\*

Start Date: 05/06/2012

**Required Date:** 19/06/2012

Start Qty: 1.00

Required Qty: 1.00

Purchased

No

250

Each

1,409.000

Location Loc Qty Loc Code 300 500 121652 500 ST300 909

108827 8 116105 5 116548 43 117611 18 119109 827 17651 8

June-05-12 3:37:15 PM

NCR: Y	es / No				WORK ORDER NON-	CONF	ORN	MANCE / UPDATE						
•		ę.						-		QA Closed:	Date	e:		
Work Orde	er:		•		DISPOSITION	_	AGAINST DEPARTMENT/PROCESS							
Part N	lo				Rework Scrap Use-as-is			Skid-tube Crosstube  Machining Small Fab  Thermoforming Finishing			d. Eng. Coor. re/Packaging Supplier	Engineering Quality		
NCR No.					Work Order Update		i	Large Fab Compo	osite	Other				
Root				1	ption of work order update	Initi		Action		Sign &				
Cause	Date	Step	Qty	(	or Non-conformance	Chief	Eng	Description		Date	Verification	QC Inspector		
Doc/Data														
Equip/Tooling														
Operator							İ							
Material							-			,				
Offset/Setup						ł	ŀ					,		
Other							l							
Process					1									
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Training					•	1								
Unauthorized				<u>L</u>		<u> </u>				<u> </u>	<u> </u>			
	· · · · · · · · · · · · · · · · · · ·					AULT C	AIEC		·····					
Langir	ng Gear				Hardware			General	Γ	<b>],,,</b> ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	[	<b>–</b>		
		Passes Be		<del></del>	Breaking	Bui			$\vdash$	Maintenan	ce	Set-up		
		lot Conce	ntric to	<sup>0/3</sup>  -	Missing	<b>⊢</b>		nation		Mislabeled	-	Supplier		
	Cracks	/Crimp at	Dondin	_	Size/Length	<b></b>		Short	$\vdash$	Off-Set Orientation	Nai-man d	Temperature/Cure Weld		
	<b>—</b>	•		⊌	Spinning Threading	Fin		ntation/Data	$\vdash$	Out of Calib	ļ	<del></del>		
	Other	on Strip in	rube	<u> </u>	-  · · · · · · · · · · · · · · · · · · ·	$\mathbf{H}$		an Imaamanlata	$\vdash$	4	<u>-</u>	Wrong Stock Pulled		
		ad Marana		<u> </u>	Wrong	$\vdash$		on Incomplete	-	Out of Seque				
		ed Wrong on Inner B		Г	Drill Holes  Misaligned		-	on Unqualified ons Incomplete/Unclear	-	Outside Dim		Other		
		Waves in I		<u> </u>	Ovalized	$\boldsymbol{\vdash}$		ons incomplete/Unclear ures/Tooling		Over/Under tolerance				
	<b>—</b>	Sequence		" <del> </del>	Over/Undersized		Incor	•	-	Part Lost Part Moved				
	i jiuiiniig	ocquence	i	1	JOVEL/ Ulluci Sizeu	I IVIL	HILOII	I CUL	1	Trait ivioved				

Kit Missing

DQA:

Raw Material

Date:

Wave/Twist in Tube

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev F

DART AEROSPACE LTD	Work Order:	<i>8</i> 5318
Description: Crosstube High Aft (407)	Part Number:	D407-667-205
Inspection Dwg: D407-667-245 Rev: F		Page 1 of 1

	Required Dimension	Min	Max	
	Height	23.39	23.65	
	1/2 Span	45.79	46.05	
	Angle	54	56	
	Total Span	91.58	92.100	
0.21	5.476		· 511 7 c	Local
	~ · · 7	,	141	1.00 ·
	5.46		S.	36
T				
	1.50		2.109	
	1.5B \.8H		1 005	
	(, 01)		1.895	1//
400 //				///
0,90		!		
	57. b°	ļ		
1 ///	\ \	ļ		53,60
1 4:4		!		/ H
177	1			I = H
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	QC15 Inspection	(), ()
	Date	17/04/2
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Rev	Date	Change	Revised by	Approved
Α	07.02.06	New Issue	KJ/JM	
В	09.06.22	Dwg Rev updated	KJ	
С	11.08.22	Dimensions updated	KJ IA	
D	11.09.30	Dimensions updated	KJ (ZX	F

lte m	QTY		
	-245	PART NUMBER	DESCRIPTION
1	х	D407-667-245	CROSSTUBE ASSEMBLY (407 HIGH AFT)
2	1	D6011-115	CROSSTUBE
3	2	D2856-400-773	ABRASION STRIP
4	2	D2873-043	NUT PLATE
5	2	D2873-045	NUT PLATE
6	1	D2894-1	SUPPORT
7	2	D3190-1	CHAFING SHIELD
8	2	D3595-063-430	RUBBER CUSHION
9	14	MS20601AD4W8	RIVET (OR NAS9302B-4-8)
10	4	MS21920-22	CLAMP
11	2	MS21920-25	CLAMP (OR MS21920-24)
12	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947- 100, TYPE II, CLASS 2 ADHESIVE)

#### **GENERAL NOTES:**

D

- 1) MATERIAL: MANUFACTURED FROM D6011-115
- FINISHED LENGTH = 112.91±0.020
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1 PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
- PAINT OUTSIDE PER DART QSI 005 4.2
  3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- UNITS: INCHES UNLESS OTHERWISE NOTED.
- BREAK SHARP EDGES: 0 005 TO 0.010 MAX.
  IDENTIFICATION: SCRIBE DART PART NUMBER 'D407-667-245" AND BATCH NUMBER ON INSIDE OF CUFF USING VIBRATING STYLUS.
- WEIGHT: 27.7 lbs
- PART IS SYMMETRIC ABOUT CENTERLINE.
- RUN-OFF PART. BLEND OUT EDGE LONGITUDINALLY, TRANSITION SHOULD BE SMOOTH,
- 10) BEND PROGRESSIVELY WITH A MINIMUM OF 6 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
- 11) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- 12) INSTALL D2894-1 CENTER SUPPORT USING A 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 PER QSI 015 LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 13) INSTALL MS21920-25 CLAMPS WITH D3595-063-430 RUBBER CUSHIONS TO SECURE D2894-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE ENSURE CLAMPS ARE OPPOSITE CROSSTUBE
  - NOTE: MS21920-24 CLAMPS CAN BE USED TO ACCOMMODATE VARYING DIAMETERS.
- ENSURE THERE IS A MINIMUM OF 1.5 THREADS IN SAFETY ON THE NUTS. 14) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 15) INSTALL D2856-400-773 ABRASION STRIP WITH A 0.13 (REF) GAP ON BOTTOM SIDE OF CROSSTUBE, PER QSI 035.
- 16) INSTALL D3190-1 CHAFING SHIELDS SO THAT OVERLAP IS ON BOTTOM SIDE OF CROSSTUBE OPPOSITE D2894-1 SUPPORT.
- 17) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS ARE SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

SHOP COPY RETURN TO LNGINEERING UNCONTROLLED COPY SUBJECT TO AMENDMENT WITHOUT NOTICE WORK ORDER MLJ 12/06/05

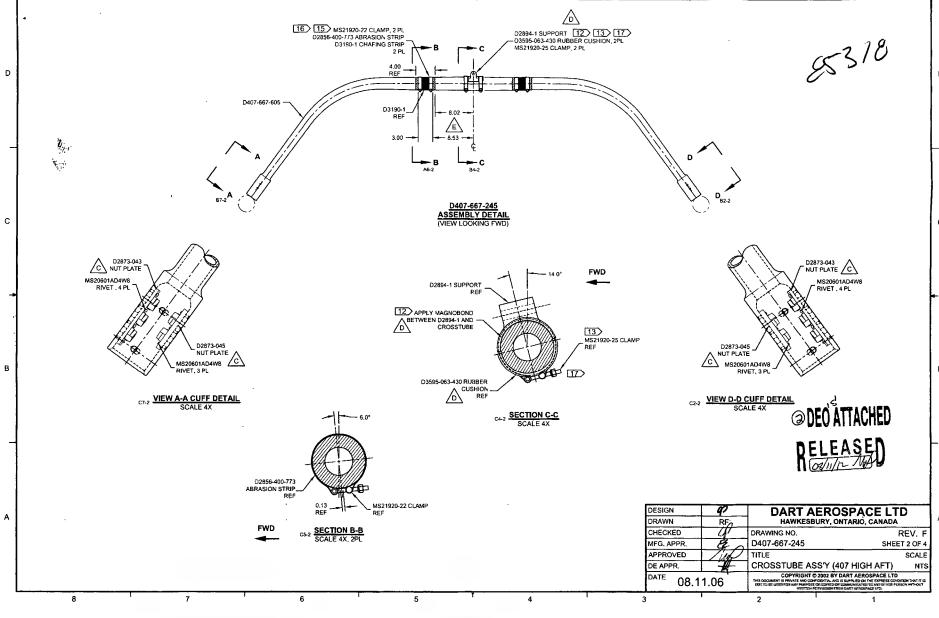
F	RELOCA	ATED FLAG #	TO NEW STANDARDS (ZN 88-1); 6 (ZN A8-3) PER NCR 210; DD TOLERANCES (ZN C6-3, C4-3 &	RF	08.11.06	
E	REORG TO CUI REASC ELIMIN	8.02 AND 8.53 WERE 8.40 AND 8.90 (ZN D5-2); REORGANIZED VIEWS AND REFORMATED DRAWING TO CURRENT STANDARDS.  REASONS: CLAMPS MOVED 0.375 TOWARD CL TO ELIMINATE INTERFERENCE WITH AIRCRAFT MOUNTS.  REFERENCE: FAR#08-21 AND ECN#1225				
D	ADD VI ORIEN -851 AE CUSHI	РН	07.02,07			
С	ADD HOLES AND NUT PLATES FOR COMPATIBILITY WITH BHT/AA SKIDTUBES				05.07.26	
В	ADD CHAFING SHIELD				03.05.21	
Α	NEW ISSUE				02.05.13	
REV.	DESCRIPTION				DATE	
DESIGN	ESIGN P DART AEROSP			ACE	LTD	
DRAWN		RF,	HAWKESBURY, ONTAR	HAWKESBURY, ONTARIO, CANADA		
CHECK	ĒĎ	A)	DRAWING NO.		REV. F	

D407-667-245 MFG. APPR. APPROVED DE APPR. CROSSTUBE ASS'Y (407 HIGH AFT) COPYRIGHT © 2002 BY DART AEROSPACE LTD DATE

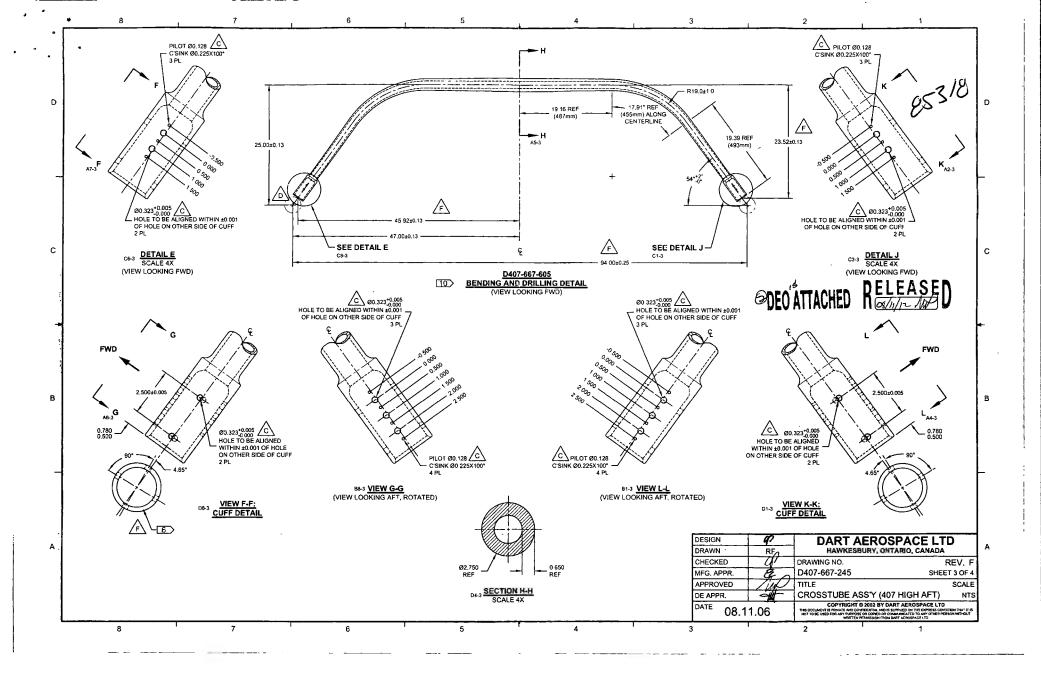
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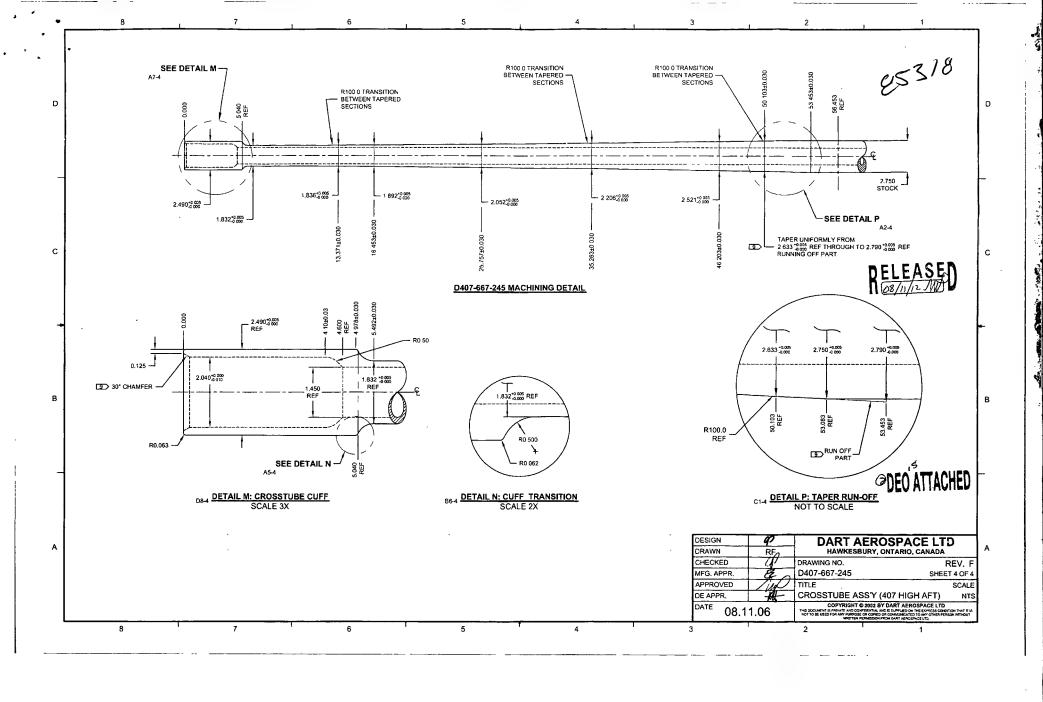
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SHEET 1 OF 4



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DRAWING N	1	• • • • • • • • • • • • • • • • • • • •	REV. F	DART AEROSPACE LTD	D.E.O. NO.	SHEET NO.	SCALE
D407-667	7-245   CROSS	TUBE ASSY (407	HIGH AFT)	ENGINEERING ORDER	D407-667-245-F-1	SHEET 1 OF 2	NTS
DRAWN	B	CHECKED	q)	MFG. APPR.	APPROVED /	DE APPR.	
DATE	11.04.08	DATE	11.04.12	DATE 11.04.12	DATE 11.04.12	DATE 11-04-12	

\*

**PURPOSE:** 

REMOVED ABRASION STRIP IN FAVOR OF A THIN LAYER OF PROSEAL 890.

### CHANGE:

#### PARTS LIST IS AMENDED AS FOLLOWS:

IS:

Qty -245	Part Number	Description
0	D2856-400-773	ABRASION STRIP
		-245

#### WAS:

3	2	D2856-400-773	ABRASION STRIP

### NOTES 2 AND 15, SHEET 1 ARE AMENDED AS FOLLOWS:

#### IS:

2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1

PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2

MASK UNDERSIDE OF CROSSTUBE AS SHOWN (HATCHED AREA) AND

PAINT OUTSIDE PER DART QSI 005 4.2

REMOVE MASKING AND APPLY CLEAR COAT

15) APPLY A THIN COAT OF PROSEAL 890 ON INSIDE CONCAVE SURFACE OF D3190-1 CHAFING SHIELDS AND LET CURE PER MANUFACTURER'S INSTRUCTIONS. INSTALL PROSEALED D3190-1 CHAFING SHIELDS ONTO CROSSTUBE BY APPLYING A THIN COAT OF PROSEAL 890 ONTO CROSSTUBE. BE SURE TO ELIMINATE ANY AIR GAPS.

#### WAS:

2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1 PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2

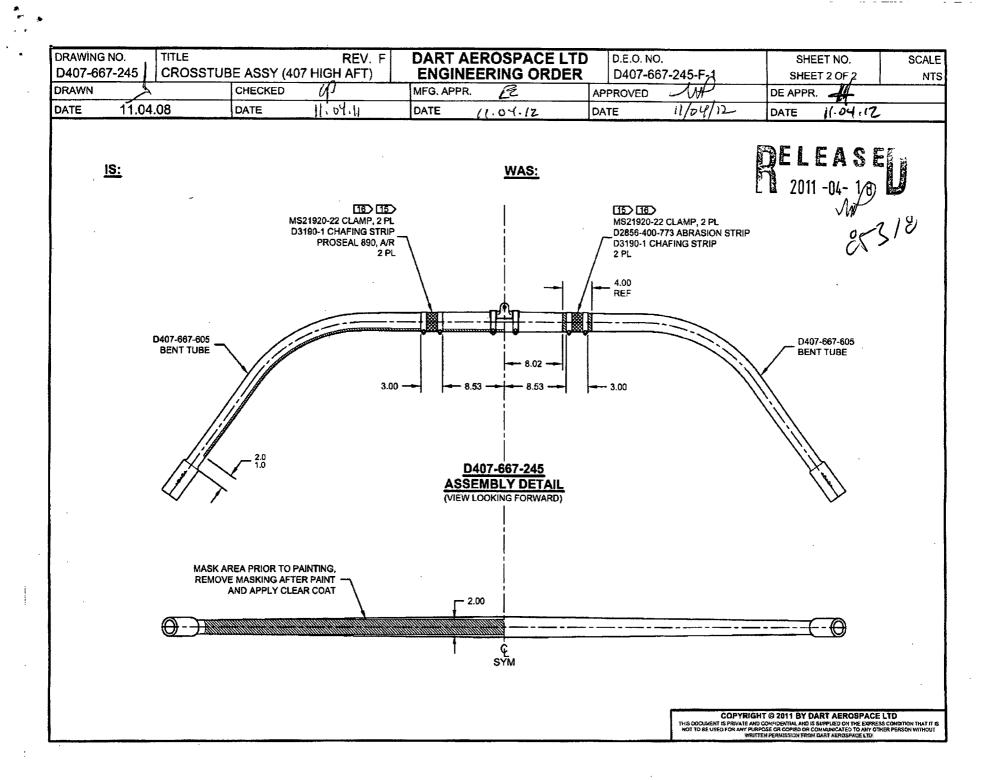
PAINT OUTSIDE PER DART QSI 005 4.2

15) INSTALL D2856-400-773 ABRASION STRIP WITH A 0.13 REF GAP ON BOTTOM SIDE OF CROSSTUBE PER QSI 035.



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DRAWING N	O. TITLE		REV. F	DART AE	ROSPACE LTD	D.E.O. NO.	SHEET NO.	SCALE
D407-667	-245 CROSST	UBE ASS'Y (4	107 HIGH AFT)	ENGINE	ERING ORDER	D407-667-245-F-2	SHEET 1 OF	NTS
DRAWN	q?	CHECKED	ASS	MFG. APPR.	G	APPROVED W	DE APPR.	
DATE	11.09.07	DATE	11.09.19	DATE	11-09-19.	DATE 11.09.19	DATE 11.09.19	

**PURPOSE:** 

REPLACE MAGNOBOND WITH 3M DP460 SCOTCH-WELD EPOXY ADHESIVE

95318

### **CHANGE:**

IS:

Item	Qty -245	Part Number	Description
12	A/R	SCOTCH-WELD DP460	EPOXY ADHESIVE, 3M SCOTCH-WELD

#### WAS:

12	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023
İ		ļ	ADHESIVE (TEXTRON/BELL SPEC. 299-947-100,
			TYPE II, CLASS 2 ADHESIVE)

NOTE 12 & 17, SHEET 1 IS AMENDED AS FOLLOWS:

IS:

- 12) INSTALL D2894-1 CENTER SUPPORT USING A 0.04" TO 0.07" THICK LAYER OF SCOTCH-WELD DP460 PER QSI 015. LET CURE FOR 24 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING. PRIOR TO PACKAGING, RE-CHECK TORQUE ON CLAMPS AFTER ADHESIVE HAS CURED FOR 24 HOURS.

# DELEASE 2011-09-29 M

#### WAS:

- 12) INSTALL D2894-1 CENTER SUPPORT USING A 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS ARE SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

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# LIQUID PENETRANT TEST REPORT

P- 12202

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		1 ~				PAGE	/_ OF/
CLIENT		AFER PAF		DATE	1/14/20/1	2 TIME AM	Ø PM 🗆
ATTENTION	Ass	1-1-10 DA		ACUREN JOB NO.	12119011	38-13-	2028,5
ADDRÉSS	12-70	ARFA DEEL	57.	PO/WO No.	17504 -		
ADDICEGO	44.140	BURE AND		WORK LOCATION	SAME	230	
	THURLS			ACCEPTANCE STE	ASTM 1417/05	/ REV./DATE	2005
PROJECT	•	F.P. I. O.	1) chos	5 7 868			
ITEM(S) EXAMINED		- /		25			
JOB DESCRIPT	ION	PROCEDURE No. LT&C	REV./DATE	2008	TECHNIQUE No. LT	42 REV./DATE	2008
PART NO.	N SEE	RESULTS			unya -	THICKNESS VAL	10 m S
SCOPE A	WET F	Loures LE	57 LIQ	up PE	WE ZLANTE	14.4NWA	Tions
1	or FEEL	DONTHE	EXTEN	VAL Su	FACE 10	00 %	
TEST DETAILS							
METHOD	∑ <b>í</b> FLUOI		/ISIBLE	☑ WATER WASH			POST EMULSIFIED
FAMILY BRAND		4 FLUX	( pr 4 cd	BLACK LIGHT S/N	/6459 □ OUTPUT > □ FLASHLIGHT □ TROUBLE		AMBIENT < 2 fc
PENETRANT REMO	VER 1120	MINIMUM DWELL TIME ? MINIMUM DRY TIME	5 10 Min. >10 Min.	OTHER	LABINO	ELIGHT - OUTPUTA	TOO TO TO SURFACE
DEVELOPER	SKID SZ	MINIMUM DWELL TIME	10 <b>M</b> IN.	LIGHT METER S/N		CAL DUE DA	TE/117,75
DEVELOPER TYPE	Non Aqu		□ DRY				2012
TEST SURFACE					Cuor Di comp	A CIEW	n Bare Metal
SURFACE CONDITI	ON ☐ As GROU ATURE ☐ < - 4°C/2		_DED 20°F то 10°C/50°	Machined F	SHOT BLASTED  10°C/50°F TO 52°C		
RESULTS-	( METRIC	☐ IMPERIAL)		-			
Scope of Services The agreement of Acuren that all descriptions, com-	Group Inc. to perform service ments and expressions of openings.	85877 86633 86633 86732 8732 8732 8732 85315 853	ms of Acuren Group Inc. owner/operator and the	r no circumstances shall s based on information and	assumptions supplied by the ownerrop omplete responsibility for the engineeri	nance of the requested service corair and are not intended in ing. manufacture, repair and	es. It is expressly understood or can they be construed as
Ctandond of Cone	s provided, Acuren Group In	nc. In no event snau Activer Group inc. uses the degree, care and skill ordin					er warranty, expressed or
CLIENT REPRESE	ENTATIVE A.A.	u Sheldon	AXX	Lelder	D	TR# E117	3 <i>8</i>
TECHNICIAN (SIGN	. //	PRINT		SIGNATURE	REPORT		
NAME (PRINT):		1. KE J.l. Z.			REVIEWED B	NAME	INITIALS
LAVIMIE (ERHAL):	CGSB Li	1 <sup>ST</sup> TECHNICIAN EVEL SNT LEVEL	CGSB Le	2 <sup>NO</sup> TECHNICIAN SVELSNT	LEVEL		
***************************************	CGSB R	REG. NO 6000	CGSB R	EG. NO			

## DART AEROSPACE LTD.



IIN-D206-667

Page 17 of 19

#### 5.0 **PARTS LIST**

#### **HIGH GEAR CROSSTUBES** 5.1

ltem	Qty -101	Qty -201	Qty -103	Qty -203		Qty -205	Part Number	Description
	Х						D206-667-101	CROSSTUBE INSTALLATION, 206A/B HIGH FWD
		X					D206-667-201	CROSSTUBE INSTALLATION, 206A/B HIGH AFT
			Х				D206-667-103	CROSSTUBE INSTALLATION, 206L/L-1/L-3/L-4 HIGH FWD
				Х			D206-667-203	CROSSTUBE INSTALLATION, 206L/L-1/L-3/L-4 HIGH AFT
					X		D407-667-105	CROSSTUBE INSTALLATION, 407 HIGH FWD
						Х	D407-667-205	CROSSTUBE INSTALLATION, 407 HIGH AFT
1	1						D206-667-141	CROSSTUBE ASSEMBLY, 206A/B HIGH FWD
2		1					D206-667-241	CROSSTUBE ASSEMBLY, 206A/B HIGH AFT
3			1				D206-667-143	CROSSTUBE ASSEMBLY,
						i		206L/L-1/L-3/L-4 HIGH FWD
4				1			D206-667-243	CROSSTUBE ASSEMBLY,
								206L/L-1/L-3/L-4 HIGH AFT
5					1		D407-667-145	CROSSTUBE ASSEMBLY, 407 HIGH FWD
6						1	D407-667-245	CROSSTUBE ASSEMBLY, 407 HIGH AFT
10	*2	*2	*2		*2		D2891-1	SUPPORT
11				*2			D2892-1	SUPPORT
12						*1	D2894-1	SUPPORT
13	*4	*4	*4		*4		D3595-063-395	RUBBER CUSHION
14				*4		10.7	D3595-063-450	RUBBER CUSHION
15						*2	D3595-075-430	RUBBER CUSHION
16	*4	*4	*4		*4		MS21920-20	CLAMP
17		<del></del>	<del>- `</del>	*4	<u> </u>	*4	MS21920-22	CLAMP
18						*2	MS21920-25	CLAMP (OR MS21920-24)
19	4	4	4	<del></del>	4	_	_AN5-32A	BOLT
20		<u> </u>	'	4	<u> </u>	4	AN5-34A /	BOLT
21	4	4	4	4	4 4	4	-MS21042L5	NUT (OR MS21042-5)
22	8	8	8	8	8	/ 8	NAS1149C0563J	WASHER (OR AN960JD516)
23	<del></del> -	<del>ٽ</del> ا	<u> </u>	l –	- <del></del>	*2	D3190-1	CHAFING SHIELD
	<del>                                     </del>	<del>                                     </del>				t -		
40	*2	<u> </u>	*2	*2	*2	*2	D2873-043	NUT PLATE
41	*2	<del> </del>	*2	*2	*2	*2	D2873-045	NUT PLATE
42	-	2	<del></del>	<del>                                     </del>		<u> </u>	D2872-043	NUT PLATE
43	<del> </del>	2	<del></del>	<del>                                     </del>	<u> </u>	-	D2872-045	NUT PLATE
44	10	<del>                                     </del>	10	<del> </del>		1	AN5-7A	BOLT
45	<del>  10 -</del>	10	10	10	10	/ 10	AN5-10A /	BOLT
46	4	10	4	10	4	<u> </u>	AN5-30A	BOLT
47	<del></del>	<del>  '''                                 </del>	<del>                                     </del>	4		1 4	AN5-32A /	BOLT
48	<b>-</b>	<del> </del>	12	<del></del> -			-AN970-4	WASHER (OPTIONAL)
48		6	12	<del> </del>	<del></del>		MS21042L5	NUT (OR MS21042-5)
	40		10	10	10	/10		WASHER (OR AN960JD516)
50	10	12	10_	10	10	10	NAS1149C0563J	MASUER (OK NIAGOTIO)
		<del> </del>	ļ	ļ	ļ		00000 0	OFNITED DDILL (TOOLING MOTINGTALLED)
60	1	1		L	l	L	D3039-3	CENTER DRILL (TOOLING, NOT INSTALLED)

\*REFERENCE ONLY. PARTS ARE INCLUDED IN D206-667-141/-143/-241/-243 & D407-667-145/-245 ASSEMBLIES ABOVE

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Revision: **D** 

Date: 11.05.01

Change Record

Part Number <u>D407-667-265</u>
Description <u>407 AFF CROSS TUBE</u>

Page \_ l \_ of \_ l

Chg.	Date	Ву	Relevant Documents
00	02.06.04	all	BER DR- D206-667 REV. E
			DESC AIC_ NOR_ROLL REA- E
<u> </u>	03.05.21		
002	03.03.21	DS	PER DR-0706-667 Rev-F
4.50			
003	05.09.09	KS	DR-D206-667 Rev. H (asm companions)
		.0	( COPY MINDS)
004	07.92.14	d/\	DR-D206-667 Rev. L/MDL-D206-667 Rev. E
<del></del>		17)	TE 1206-66   NEN : E/MUL-1206-66   KEW. E
m	17 11 and	<u> </u>	70 201 1170 7/2
<u>w</u> 5	07.11.07	炒	DR-D26-667 Rev. F (D2894 Rev. C)
	77 77 77	<u> </u>	
006	08.08.18	***	D407-667-245 Rev. E (ECN 1225)
		10	(CO 1205)
007	11.04. A	47	NO COCO DA AND AND AND AND AND AND AND AND AND
001	11,04.61	<del>-12)</del>	DS19550 Rev. A. DED-D407-669-F-1
			(ECN 11-551)
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008	11,09,29	987	DS19574 Day A D29911 Day 5
<u> </u>	1	()	DS19574 Rev. A. D2894 Rev. E DEO-D407-667-245-F-2 (ECN 11-643
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